never since fully recovered his weight. What alarmed the family was his mental condition, which will be spoken of later.

Examination of very recent date shows physical findings as follows: Patient tall, pale and cadaverous-looking; gait not characteristic; station with the eyes shut normal. The pupils are somewhat irregular in outline, the right more so than the left. The right is also larger than the left, but both are normal to light and accommodation. The head shows a fine rotatory tremor, and there is distinct nystagmus when the eyes are moved to right or left; none with upward and downward movements. The left brow seems to be less wrinkled than the right; the other facial movements are normal. There is no marked tremor of the tongue, which is protruded straight. The speech is not scanning, but at times seems dysarthric and nasal. There is no intention tremor, and the hand-grasps are powerful—in fact, the general muscular strength is excellent. Sensation is everywhere normal; the deep and superficial reflexes also normal.

The weight is about 140 pounds.

Judged by the quickness and accuracy with which the patient performed certain mental tasks set before him, his intellectual activity seemed unimpaired. His handwriting is normal.

The family state that he cannot be trusted to get the right things at the store, but the patient says his main difficulty is to remember whether it is vinegar or molasses, butter or lard he is after. He states that he always gets the right thing, however.

The striking feature of interest about his mental condition is the peculiar delusion he harbors about his legs. He insists with quiet dignity that the legs he walks about upon are not his legs at all; he knows they are not his, because his had certain marks which these do not possess. He says he thinks somebody else has his legs, but he can't say who. He insists that no amount of argument will convince him of the falsity of his belief.

In coming to a diagnosis in this case the various progressive degenerations were considered but ruled out, partly from the history and partly on the physical findings. The physical signs, such as the nystagmus and the tremor of the head, are most logically accounted for on the basis of unregenerated nerve fibers, while the mental probably came from the general intoxication. The specific delusion about the legs is traced back to sensory perversions which arose during the course of the peripheral neuritic process.

## A CASE OF POSTERIOR COLUMN DEGENERATIONS FOLLOWING INJURY TO THE POSTERIOR ROOTS OF THE SEVENTH CERVICAL NERVE.

By Drs. Mitchell and Barrett.

The material for the study came from a patient who died at Danvers Insane Hospital sixteen days following fracture of both arches of the fifth cervical vertebra.

The man was forty-seven years of age. For ten years he had led a vagabond life, frequently confined for drinking habits, and while intoxicated fell and sustained the injury mentioned. For three days he was able to walk about, although there was lessened muscular power. He was admitted to the Danvers Hospital on the sixth day following injury. At that time he had a temperature of 102 degrees, there was almost complete paralysis of muscles of trunk and extremities. Had nephritis, cystitis and a marked impairment of sensations below the level of the second rib, except for the outer surface of both arms. He had been examined by physicians on the second day after the injury, and it was reported that the tendon reflexes were present at that time. All tendon reflexes were absent upon admission to the hospital. Plantar and cremasteric reflexes remained until the day before death. At no time were electrical reactions abnormal.

There was progressive impairment of sensory functions to a point of complete anesthesia over the area mentioned. Patient died of pyelonephritis.

Anatomical findings.—The autopsy showed slight hemorrhagic exudate around the broken ends of bone. The cord was swollen at the sixth and seventh segments so as to fill the canal. There was apparently no bony pressure at any particular point. At the seventh segment the transverse sections of cord studied histologically showed that the injury to the cord was largely confined to the lateral and anterior portions. Many cells in the anterior horns showed axonal reaction, while the cells of the posterior column were normal. Under the Marchi stain the anterior horn was dotted with black, and there were blackened fibers in the anterior commissure, and there were scattered, blackened fibers in the anterior columns and a few in the lateral columns. In the posterior columns the principal change was seen in the entering root fibers. Nearly all the posterior root fibers were blackened. Similar findings were less marked in the sixth cervical segment. The course of the seventh cervical fibers could be traced to the medulla, and the course of the descending fibers of the seventh nerve could be traced downward in the comma tract to the sixth dorsal segment.

The case was interesting clinically as showing loss of deep reflexes following transverse lesion of the cord. It also presented two interesting anatomical points: First, the injury to the posterior columns involving the entering posterior roots of the seventh nerve, and there was no injury to the posterior horn, so that the ascending course of the fibers of the seventh nerve could be traced to the medulla. Second, showed that descending fibers of the seventh nerve were traced in the comma tract to the sixth dorsal segment, lending support to the theory of exogenous origin of the fibers forming this tract.

Dr. Walton said that Dr. Mitchell's case was of especial interest to him on account of the reflexes. The suggestion that the loss of knee-jerk results in a given case from cerebral or upper cord lesion is sometimes met by the objection that there may be coincident lesion in the lumbar region. It is very gratifying that in this case careful examination has eliminated such lesion. The loss of reflex was in this case coincident with the loss of voluntary power resulting from the cervical lesion. The burden of proof rests, therefore, upon those who would deny the dependence of the one upon the other.

The preservation of electrical reactions in such cases shows that the prevailing idea has stood the test of experience, that the electrical reactions have their seat in the spine purely. On the other hand, the long prevailing view that the knee-jerk is purely spinal and merely inhibited by the brain, requires and is receiving readjustment.